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During the PTO interview on March 24, 2006 (the interview) the Examiner agreed the draft amendment overcame the rejections of the Office action dated November 15, 2005 and there was no motivation to combine Cargemel (SCSI electrical fault protection) with the Bicknell and El-Batal (Serial ATA coupling circuit references) but asserted claims could be rejected over US Patent Application Publication No. 2004/0117545 A1 to Borsini (Borsini).

In the interview, applicants responded the invention has serial communication lines to the microcontroller that are separate from the lines making up the Serial ATA communication path. As shown in our Figure 11, communication lines 95 and 97 provide inputs to the microcontroller 27 that are separate from (or outside) the Serial ATA communication paths 46 and 58 while Borsini's signal lines 94 and 94' to the microcontroller 104 are in the Serial ATA communication path as shown in Borsini's Figure 4.

The Examiner responded the requests and grants on Borsini's lines 94 and 94' are also separate from the lines of the Serial ATA communication path. Applicants disagreed and explained Borsini's lines 94 and 94' must be in the SATA communication path for a Serial ATA device, because the lines 94 and 94' carry requests and grants for disk access between bridge controller card A or B and Serial ATA disk drive 84 (see paragraph nos. 0028 - 0030). Further, Borsini would not need the method of Figures 5-6 to distinguish the requests and grants of disk access from a command to read the adapter board 88 if lines 94 and 94' were separate from the Serial ATA communication path. Thus, the claimed invention is patentable over Borsini.

In paragraph nos. 5-6 of the Office action, the Examiner rejects claims 1 and 23 under 35 USC 103(a) as being unpatentable over US Patent Application Publication No.

1 US2003/0221061 A1 to El-Batal et al. (El-Batal) and US Patent Application Publication
2 No. US2003/0193776 A1 to Bicknell et al. (Bicknell).

3 The Examiner concedes El-Batal fails to disclose a microcontroller to control coupling
4 circuit switches (page 6) and Bicknell and El-Batal fail to disclose a microcontroller
5 coupled to a power switch (page 7).

6 Amended claim 1 captures these differences as follows:

7
8 A coupling circuit for a Serial ATA storage device connected to storage device
9 power through a power switch, connected to a first storage controller through a first
10 bidirectional serial communication line, and connected to a second storage controller
11 through a second bidirectional communication line, comprising:

12 a first Serial ATA controller-side transceiver receiving a first Serial ATA
13 communication path;

14 a second Serial ATA controller-side transceiver receiving a second Serial ATA
15 communication path;

16 a Serial ATA storage device-side transceiver;

17 coupling circuit switches selectively coupling either the first Serial ATA controller-
18 side transceiver or the second Serial ATA controller-side transceiver to the Serial ATA
19 storage device-side transceiver; and

20 a microcontroller coupled to the coupling circuit switches and the power switch
21 and adapted to control the coupling circuit switches and the power switch based on
22 communication through the first or the second bidirectional serial communication lines.

23 Applicants submit claim 1 would have been nonobvious over Bicknell and El-Batal
24 because, among other things, neither teach or suggest a microcontroller (1) coupled to
25 the coupling circuit switches and the power switch and (2) adapted to control the
26 coupling circuit switches and the power switch based on communication through the
27 first and the second bidirectional serial communication lines. Support for this
28 amendment to claim 1 can be found, for example, in Figure 11 and the accompanying
29 specification. Claim 23 is patentable for similar reasons.

1 In paragraph no. 7 of the Office action, the Examiner rejects claims 3-7 and 22 under 35
2 USC 103(a) as being unpatentable over El-Batal and Bicknell as applied to claim 1 and
3 further in view of U.S. Patent No. 6,295,609 B1 to Cargemel et al. (Carmegel).

4 As to claim 3, the Examiner concedes El-Batal and Bicknell fail to disclose a
5 microcontroller including a processor coupled to a power switch but asserts Cargemel
6 discloses a microcontroller coupled to a power switch and should be combined with El-
7 Batal and Bicknell to increase user friendliness of repairing a failed storage device.

8
9 Applicants submit since the microcontroller coupled to a power switch could not be
10 found in El-Batal and Bicknell, the Office has sought this feature by canvassing the prior
11 art, using our application as a guide, until all elements of claim 3 were found. Further,
12 the Office action has now turned to Cargemel, which is not prior art.

13 Applicants submit Cargemel may be considered as prior art as long as it is (1) in the
14 field of the inventor's field of endeavor or (2) in an analogous art that is reasonably
15 pertinent to the inventor's particular problem, that is, in an art an inventor would look to
16 for solutions. Cargemel fits neither category.

17 First, Cargemel is clearly not in the inventor's field of endeavor. Cargemel relates to
18 electrical fault protection of a SCSI data storage system not coupling circuits for multiple
19 access paths to single ported storage devices. Cargemel's control units EG1 - EG5 act
20 as circuit breakers for lines L1-L5 to prevent electrical damage (Figure 1 and col. 5,
21 lines 32-39) to a SCSI data storage system. Specifically, Cargemel shows control unit
22 EG1, a circuit breaker, has a module MOD measuring current flowing through an
23 electrical line LI1 for disk unit UND1. If the module MOD detects an electrical fault, the
24 control line LU1 opens switch INT. Microcontroller MC periodically tries to close switch
25 INT (i.e., the only component to which it is connected). If the electrical fault disappears,
26 the module MOD discontinues the control line LU1, closing switch INT. If the electrical
27 fault persists, disk unit UND1 remains disconnected from the power supply (Figure 2,
28 col. 6, line 55 - col. 7, line 10). This is all intended to prevent an electrical fault from
29 damaging a SCSI data storage system which is outside the inventor's field of endeavor.
30

1 Second, Cargemel is not reasonably pertinent to solving the inventor's particular
2 problem. Nothing about electrical fault protection in SCSI data storage system is
3 reasonably pertinent to providing intelligence and functions to a Serial ATA coupling
4 circuit. Thus, Cargemel is not prior art to our invention and should not be combined with
5 Bicknell and El-Batal.

6 The Examiner asserts Cargemel should be combined with El-Batal and Bicknell to
7 increase user friendliness of repairing a failed storage device. However, the references
8 all fail to mention repairing failed storage devices. Thus, the purported motivation is to
9 improve (increase user friendliness) a feature (repairing a failed storage device) never
10 discussed in the references. Only our application describes power cycling to repair a
11 failed SATA storage device (e.g., paragraph 0066). All of this indicates this motivation is
12 derived from impermissible hindsight. We request the rejection be withdrawn.

13
14 As to claim 4, the Examiner states El-Batal and Bicknell teach a microcontroller
15 including a processor coupled to a power switch but fail to disclose the set of D flip-
16 flops, which are according to Examiner well known in the art.

17 Claim 4 is allowable based on its dependency on amended claim 1. Further, the
18 rejection contradicts page 6 of the Office action, conceding "El-Batal et al. do not
19 expressly disclose a microcontroller...." and on page 7, where the Office concedes El-
20 Batal and Bicknell do not disclose the microcontroller includes a processor coupled to a
21 power switch. Thus, the rejection should be withdrawn and claim 4 allowed.

22 As to claims 5 and 22, the Examiner states that El-Batal and Bicknell do not disclose to
23 power up the storage device and power down the storage device, but states Cargemel
24 teaches a microcontroller programmed to switch the coupling circuit to a first storage
25 controller, switch the coupling circuit to a second storage controller, power up the Serial
26 ATA storage device and power down the Serial ATA storage device.

27
28 This rejection has no support. Cargemel fails to disclose a microcontroller programmed
29 to switch the coupling circuit to a first storage controller and to a second storage
30 controller. Cargemel fails to disclose this same microcontroller is programmed to power
up and down any storage device much less a Serial ATA storage device.

1 As shown in Figures 1-2 of Cargemel, each microcontroller is limited to control of one
2 switch affecting one component. For example:

3 The microcontroller of controller unit EG1 affects only controller UNC1

4 The microcontroller of controller unit EG2 affects only controller UNC2

5 The microcontroller of controller unit EG3 affects only disk unit UND1

6 The microcontroller of controller unit EG4 affects only disk unit UND2

7 The microcontroller of controller unit EG5 affects only disk unit UND3

8 Since these references all lack this claim limitation-- a microcontroller programmed to
9 switch the coupling circuit to a first storage controller, switch the coupling circuit to a
10 second storage controller, power up the Serial ATA storage device, and power down the
11 Serial ATA storage device-- they cannot render claim 5 obvious.

12 Amended claim 22 distinguishes over Bicknell, Cargemel, and El-Batal for reasons
13 similar to those presented in connection with amended claim 1.

14 As to claim 6, the Examiner states Cargemel teach the microcontroller programmed to
15 write data to a memory, read data from the memory, and read the status of the coupling
16 circuit. Claim 6 is allowable based on its dependency on amended claim 1.

17 In paragraph no. 8 of the Office action, the Examiner rejects claim 2 under 35 USC
18 103(a) as being unpatentable over El-Batal and Bicknell as applied to claim 1 and
19 further in view of U.S. Patent Application Publication No. 2003/0158991 A1 to Deyring
20 et al. (Deyring).

21 As to claim 2, contrary to Examiner's statement that it would have been obvious to
22 combine Deyring's out of band (OOB) squelch control component to El-Batal and
23 Bicknell to increase reliability of Serial ATA bus operation, there is no such suggestion.

24 OOB allows a Serial ATA storage device to receive user commands not defined in the
25 Serial ATA specification version 1.0. That specification fails to suggest the Examiner's
26 purpose for OOB, a command to switch a mux coupled to a Serial ATA storage device,

1 much less dual access paths to the Serial ATA storage device. This rejection is not
2 supported by the cited references, and should be also withdrawn. Claim 2 is allowable
3 over El-Batal and Bicknell and Deyring.

4 Applicants add claims 24-31 to encompass other patentable features of the invention.

5
6 Please email reply to schedule our interview to discuss this amendment.

7 Respectfully Submitted,

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9 _____

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